

Product Overview

This section provides an overview of the products that support protocol translation. You will find the following information in this chapter:

- Protocol Translation Functionality
- Supported Transmission Protocols and Services
- Supported Interfaces and Connections
- Physical Configuration Options

Note In the context of this publication, a router set up to run protocol translation software is referred to as a router.

Protocol Translation Functionality

Routers are high-performance application-level gateways that can provide connectivity among systems running differing protocols and over a variety of media.

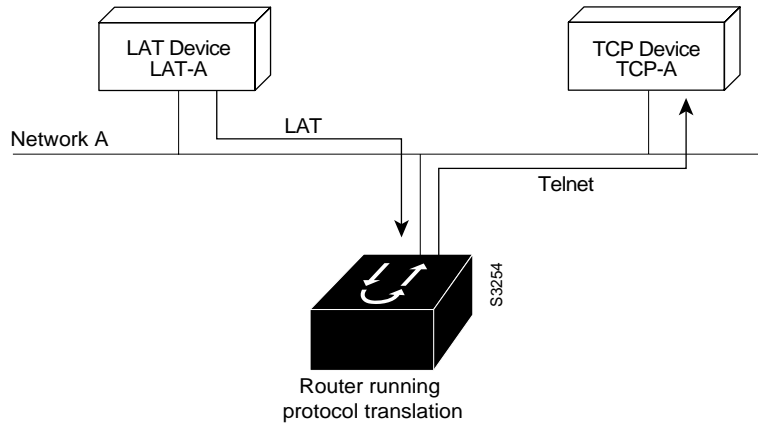
As part of their software capability, routers provide distributed network management facilities to assist in performance monitoring and run-time error logging, and support the Simple Network Management Protocol (SNMP). These facilities enable you to examine and adjust the routers for optimum performance.

Routers using protocol translation translate virtual terminal protocols, allowing devices running dissimilar protocols to communicate. The protocol translation software supports Telnet (called TCP for Transmission Control Protocol in the configuration syntax of protocol translation software), Local Area Transport (LAT), Serial Line Internet Protocol (SLIP) and Point-to-Point Protocol (PPP), and X.25. One-step protocol translation software performs bidirectional translation between any of the following protocols:

- Telnet and LAT
- Telnet and X.25
- LAT and X.25
- Telnet and SLIP/PPP
- LAT and SLIP/PPP
- X.25 and SLIP/PPP

Figure 1-1 illustrates LAT-to-Telnet protocol translation.

Figure 1-1 LAT-to-Telnet Protocol Translation



Note TN3270 and XRemote are also supported by the protocol translation software. However, to translate between these and other supported protocols, you must use the two-step method. For information about two-step translations in general, refer to the *Cisco Access Connection Guide*. Refer to the chapters “Configuring TN3270,” “Configuring SLIP and PPP,” and “Configuring XRemote” later in this publication for task-oriented configuration information about TN3270, SLIP and PPP, and XRemote. Refer to the chapters “TN3270 Configuration Commands,” “SLIP and PPP Configuration Commands,” and “XRemote Configuration Commands” later in this publication for detailed command descriptions for TN3270, SLIP and PPP, and XRemote.

Supported Transmission Protocols and Services

Routers provide a flexible set of capabilities for making connections using different media and between different hosts and resources running different protocols. The following descriptions summarize the protocols and connection services supported by routers:

- Transmission Control Protocol/Internet Protocol (TCP/IP)—The most widely implemented protocol suite on networks of all media types. TCP/IP is today’s standard for internetworking and is supported by most computer vendors, including all UNIX-based workstation manufacturers.
- SLIP and PPP—Encapsulation methods that provide an inexpensive way of connecting PCs over asynchronous lines to a network. SLIP and PPP over asynchronous dial-up modems allow a home computer to be connected to a network without the cost of a leased line.
- Local Area Transport (LAT) protocol—Digital Equipment Corporations’s proprietary terminal connection protocol used with Digital minicomputers. Router/bridges support bridging of the LAT protocol. Routers translate LAT packets to X.25, Telnet, and TN3270.
- X.25 PAD protocols—Cisco routers support the X.25 protocol and X.3/X.28/X.29 specifications.
- IBM 3278 terminal emulation—The Cisco implementation of TN3270 terminal emulation provides TN3270-based connectivity—specifically, emulation of IBM 3278-2 terminals—to IBM hosts over serial lines.

- Network Computing Devices Inc. XRemote terminal facility—XRemote is a protocol developed specifically to optimize support for X Window operation at a terminal over a serial communications link. XRemote allows for remote X Window operation using an NCD terminal.

Supported Interfaces and Connections

In addition to supporting Ethernet (the 802.3 specification of the Institute of Electrical and Electronic Engineers [IEEE]), routers support synchronous serial circuits at many speeds and can be connected to two serial lines. Router serial interfaces are can of transmit and receive data at up to four megabits per second, and support connectivity to WAN services such as Switched Multimegabit Data Service (SMDS), Frame Relay, and X.25.

A broad line of media adapters are also available for your convenience, including RS-232, V.35, X.21, and RS-449.

Physical Configuration Options

This section describes the router models that can be set up to run protocol translation software and the microprocessors these models use.

Platforms Supporting Protocol Translation

Internetwork Operating System (IOS) Release 10.3 supports protocol translation on the following router platforms:

- Cisco 4000 series (including the Cisco 4500)—A multiprotocol router that supports up to three network processor modules at a time, including Ethernet, Token Ring, and Dual Serial interfaces. The Cisco 4000 comes standard with Flash EPROM and is ideal for use in branch office or remote environments. Protocol translation is provided as a software option, thereby supporting concurrent routing, bridging, and protocol translation capabilities.
- Cisco 3000 series—A two-port multiprotocol router in a fixed configuration with Ethernet, Token Ring, serial, and ISDN BRI interface options. The ISDN-BRI interface is composed of two B channels and one D channel for circuit-switched communication of voice, data, and video. The Cisco 3000 comes standard with Flash memory and is ideal for use in branch office or remote environments. Protocol translation is provided as a software option, thereby supporting concurrent routing, bridging, and protocol translation capabilities.
- Cisco 2500 series—A two-port multiprotocol router and access server. As a router, it has a fixed configuration with Ethernet, Token Ring, synchronous serial, and ISDN BRI interface options. As an access server, it has a fixed configuration with Ethernet, synchronous serial, and either 8 or 16 asynchronous lines. A variety of protocol translation software feature sets permits the Cisco 2500 series router to be tailored to the needs of specific remote environments. A Cisco 2500 series router can also be configured to connect a local SDLC device and a local-area network (LAN) to a corporate internetwork using the second synchronous serial port.

Note Protocol translation is also supported on the 500-CS and the ASM-CS communication server platforms. Protocol translation on these platforms is described in the *Access and Communication Servers Configuration Guide*.

Microprocessors

The Cisco products listed in the previous section use either the MC68020, MC68030, or MC68040 microprocessor for high-speed operation. All microprocessors contain onboard RAM, Flash memory, system ROM holding all operating system, bootstrap, and diagnostic software, and hardware and software support for a control console.

Routers also provide nonvolatile memory that retains configuration information despite power losses or system reboots. With nonvolatile memory, the terminal and network servers do not need to rely on other network servers for configuration and boot service information.